

Nebraska's Public Water System Program 2005 Annual Report

January 1 to December 31, 2005

**Nebraska's tenth annual report
as required by the 1996 Amendments to
the federal Safe Drinking Water Act**

June 30, 2006

**Jack Daniel
Administrator
Environmental Health Services Section**

**301 Centennial Mall South
P.O. Box 95007
Lincoln, NE 68509-5007
Phone: (402) 471-2541
Fax: (402) 471-6436
TDD: (402) 471-9570**

<http://www.hhss.ne.gov/enh/pwsindex.htm>

Available in alternate formats

To Obtain a Copy of the 2005 Public Water System Report

As required by the federal Safe Drinking Water Act, the State of Nebraska has made the 2005 Public Water Systems report available to the public. Interested individuals can obtain a copy of the 2005 Annual Public Water Systems Report for Nebraska by accessing:

The Department's Web site: <http://www.hhss.ne.gov/enh/pwsindex.htm>

Telephone: 402-471-2541

Fax Number: 402-471-6436

E-Mail joann.wagner@hhss.ne.gov

Address 301 Centennial Mall South, P.O. Box 95007, Lincoln, NE 68509

Contact Jo Ann Wagner, Editor
402-471-0520

Overview Of the Federal Public Water Supervision Program

The United States Environmental Protection Agency (EPA) established the Public Water System Supervision (PWSS) Program under the authority of the 1974 Safe Drinking Water Act (SDWA). Under the SDWA and the 1986 Amendments, EPA sets national limits on contaminant levels in drinking water to ensure that the water is safe for human consumption. These limits are known as Maximum Contaminant Levels (MCLs) and Maximum Residual Disinfectant Levels (MRDLs). For some regulations, EPA establishes treatment techniques in lieu of an MCL to control unacceptable levels of contaminants in water.

EPA also regulates how often public water systems (PWSs) monitor their water for contaminants and how often they report the monitoring results to the states or EPA. Generally, the larger the population served by a water system, the more frequent the monitoring and reporting requirements. EPA requires PWSs to notify the public when they have violated these regulations. In addition, EPA requires some PWSs to monitor for unregulated contaminants to provide data for future regulatory development. Finally, EPA requires PWSs to notify their consumers when they have violated these regulations. The 1996 Amendments to the SDWA require consumer notification to include a clear and understandable explanation of the nature of the violation, its potential adverse health effects, steps that the PWS is undertaking to correct the violation and the possibility of using alternative water supplies during the violation.

The SDWA applies to the 50 states, Puerto Rico, the Virgin Islands, American Samoa, Guam, the Northern Mariana Islands, the District of Columbia, and Indian Lands.

The SDWA allows states and territories to seek EPA approval to administer their own PWSS programs. The authority to run a PWSS program is called primacy. For a state to receive primacy, EPA must determine that the state meets certain requirements laid out in the SDWA and the regulations, including the adoption of drinking water regulations that are at least as stringent as the federal regulations and a demonstration that they can enforce the program requirements. Of the 56 states and territories, all but Wyoming and the District of Columbia have primacy. The EPA regional offices administer the PWSS programs within these two jurisdictions.

The 1986 SDWA amendments gave Indian Tribes the right to apply for and receive primacy. EPA currently administers PWSS Programs on all Indian lands except the Navaho Nation, which was granted primacy in late 2000.

Annual State Public Water System Report

Each quarter, primacy states submit data to the federal Safe Drinking Water Information System (SDWIS/FED) an automated database maintained by EPA. Data include, but are not limited to, public water system (PWS) inventory information; the incidence of Maximum Contaminant Level (MCL), Maximum Residual Disinfectant Level, monitoring, and treatment technique violations; and information on enforcement activity related to these violations. Section 1414(c)(3) of the federal Safe Drinking Water Act requires states to provide EPA with an annual report of violations of the primary drinking water standards. This report provides the numbers of violations in each of six categories: MCLs, MRDLs, treatment techniques, variances and exemptions, significant monitoring violations, and significant consumer notification violations. The EPA regional offices report the information for Wyoming, the District of Columbia, and all Indian Lands except the Navaho Nation. EPA regional offices also report federal enforcement actions taken. Data retrieved from SDWIS/FED form the basis of this report.

The following report is a summary of the compliance of Nebraska's public water systems with the Safe Drinking Water Act during 2005, as required by the 1996 Amendments to the federal Safe Drinking Water Act. Other significant program activities that the program staff perform in assuring water is safe for human consumption are also included in this report.

The mission of the Public Water System Program of the Nebraska Department of Health and Human Services Regulation and Licensure (Department) is to protect the health and welfare of Nebraskans by assuring safe, adequate, and reliable drinking water.

People expect their drinking water will be safe when they turn on the faucet. Program staff work in many arenas to assure safe drinking water.

More information about systems with violations that occurred in 2005 is available from the Nebraska Department of Health and Human Services Regulation and Licensure, 301 Centennial Mall South, P.O. Box 95007, Lincoln, NE 68509, phone 402-471-2541 or at EPA's website:

http://www.epa.gov/enviro/html/sdwis/sdwis_ov.html

This report is also available on the Department's website at:

<http://www.hhs.state.ne.us/enh/pwsindex.htm>.

Notices of the report's availability will be provided to public libraries, local health departments, and media outlets.

Terms Used In This Report

Consumer Notification

Every Community Water System is required to deliver to its customers a brief annual water quality report. This report is to include some educational material and provide information on the source water, the levels of any detected contaminants, and compliance with drinking water regulations.

Maximum Contaminant Level (MCL)

Under the federal Safe Drinking Water Act, EPA sets national limits on contaminant levels in drinking water to ensure that the water is safe for human consumption. These limits are known as Maximum Contaminant Levels (MCLs).

Maximum Residual Disinfectant Level (MRDL)

EPA sets national limits on residual disinfectant levels in drinking water to reduce the risk of exposure to disinfectant byproducts formed when the public water systems add chemical disinfectant(s) for either primary or residual treatment. These limits are known as Maximum Residual Disinfectant Levels (MRDLs).

Monitoring

A PWS is required to monitor and verify that the levels of contaminants present in the water do not exceed the MCL. If a PWS fails to have its water tested as required or fails to report test results correctly to the Department, a monitoring violation occurs.

Public Water System (PWS)

A Public Water System is a system that provides water via piping or other constructed conveyances for human consumption to at least 15 service connections or serves an average of at least 25 people for at least 60 days each year. For this report when the acronym "PWS" is used, it means systems of all types unless specified in greater detail.

There are three types of public water systems:

1. **Community water systems** (a) serve at least 15 service connections used by year-round residents of the area served by the system or (b) regularly serve at least 25 year-round residents. They include such entities as mobile home parks, rural water districts, and sanitary improvement districts, as well as municipalities.
2. **Non-transient non-community water systems** are not community water systems. They regularly serve at least 25 of the same individuals over six months of the year. Examples include a manufacturing company with its own well and a rural school with over 25 students.

3. **Transient non-community water systems** are non-community systems that do not regularly serve at least 25 of the same persons over six months per year. Examples of transient non-community systems are a café beside the highway which has its own well and the water systems at interstate rest areas and state parks.

Significant Monitoring Violations

For this report, significant monitoring violations are generally defined as any significant monitoring violation that has occurred during the calendar year of the report. A significant monitoring violation, with rare exceptions, occurs when no samples were taken or no results are reported during a compliance period. Detailed descriptions of what constitutes a major monitoring violation for most drinking water regulations can be found in EPA's *Consolidated Summary of State Reporting Requirements for the Safe Drinking Water Information System* (SDWIS), EPA 812-B-95-001, (*Consolidated Summary*) (<http://www.epa.gov/safewater/sdwisfed/pdf/2delete/conssumm.pdf>).

Significant Consumer Notification Violations

For this report, a significant public notification violation occurred if a community water system completely failed to provide its customers with the required annual water quality report.

Treatment Techniques

For some regulations, the EPA establishes treatment techniques (TTs) in lieu of an MCL to control unacceptable levels of certain contaminants. For example, treatment techniques have been established for viruses, some bacteria, and turbidity. Treatment techniques include the use of aeration, settling, filtration or other physical process and/or the addition of any chemical or chemicals for the purpose of removing, deactivating, or adjusting the level of one or more contaminants present in the raw water supply source.

Variances and Exemptions

A primacy state can grant a PWS a variance from a primary drinking water regulation if the characteristics of the raw water sources reasonably available to the PWS do not allow the system to meet the MCL. To obtain a variance, the system must agree to install the best available technology, treatment technique(s), or other means of limiting drinking water contamination that EPA finds are available (taking costs into account), and the Department must find that the variance will not result in an unreasonable risk to public health. The variance will be reviewed not less than every 5 years to determine if the system remains eligible for the variance.

The Department can grant an exemption temporarily relieving a PWS of its obligation to comply with an MCL, treatment technique, or both if the system's noncompliance results from compelling factors (which may include economic factors) and the system was in operation on the effective date of the MCL or treatment technique requirement. A new PWS that was not in operation on the effective date of the MCL or treatment technique requirement by that date may be granted an exemption only if no reasonable alternative source of drinking water is available

to the new system. Neither an old nor a new PWS is eligible for an exemption if management or restructuring changes can reasonably be made that will result in compliance with the SDWA or improvement of water quality, or if the exemption will result in an unreasonable risk to public health. The state will require the PWS to comply with the MCL or treatment technique as expeditiously as practicable, but not later than three years after the otherwise applicable compliance date.

In short, a variance or an exemption may be issued, but unreasonable risk to public health is not allowed. For all the details regarding exemptions and variances, see Title 179 NAC 6, Variances and Exemptions (<http://www.hhs.state.ne.us/reg/t179.htm>).

Nebraska's Public Water Systems

Population and Type of System

Nebraska public water systems can be broken down into categories based on the size of the population served.

Population	CWS	NTNC	TNC	Total Systems	Percentage*
25-100	79	108	422	609	45.3%
101-500	287	53	125	465	34.6%
501-1000	103	7	18	128	9.5%
1001-3300	89	10	0	99	7.4%
3301-10,000	26	3	0	29	2.2%
10,000-50,000	12	0	0	12	0.9%
>50,000	2	0	0	2	0.1%
TOTAL	598	181	565	1344	100%

CWS = Community 598 systems

NTNC – Non-transient, non-community 181 systems

TNC = Transient, non-community 565 systems

* Percentages have been rounded off.

Public Water In Nebraska

The Department of Regulation and Licensure, through its Public Water System Program, administers the State's Regulations Governing Public Water Systems (Title 179 NAC 2 through 22), promulgated under the state's SDWA pursuant to and in accordance with the federal SDWA. EPA promulgates rules and sets standards in accordance with the federal SDWA which was originally passed in 1974 and later amended in 1986 and 1996.

These rules are generated by EPA in accordance with the federal SDWA and its amendments. The SDWA includes water quality standards, and requirements for sampling, treatment and public notification. The Act affects approximately 1,344 public water systems in Nebraska. Public water systems provide water to approximately 80 percent of the people of Nebraska. Private domestic wells provide water for other Nebraskans.

Most of the water Nebraskans drink is groundwater. Only five public water systems in the state obtain their drinking water from surface water. Another 29 systems purchase water from those five systems. In addition, seven systems utilize groundwater under the influence of surface water, and 13 additional systems purchase water from those seven systems. The remaining systems use ground water, including 77 systems that purchase their water from another system.

The 1996 Amendments to the Safe Drinking Water Act require each state to publish a report for the calendar year 2005 by July 1, 2006. This report must include the violations which occurred in the state during 2005. Specific information about the systems that had violations is available from the Nebraska Department of Health and Human Services Regulation and Licensure, 301 Centennial Mall South, P.O. Box 95007, Lincoln, NE 68509, phone 402-471-2541.

New In 2005

Security Activities

Law Enforcement Video. The Department produced a video in Waverly, Nebraska, designed to provide information to law enforcement personnel regarding security issues for public water systems. Copies were sent out to all law enforcement agencies in the state.

Emergency Response Planning Tabletop Exercises. Security is of utmost importance to public water systems. To help systems with emergency response preparedness, the Department contracted with Midwest Assistance Program (MAP) to hold eight workshops of 5-6 hours in length across the state, targeting water operators and managers. Attendees participated in emergency response planning tabletop exercises.

The Department also conducted 12 emergency response planning tabletop exercises with county health departments. A total of 154 people attended, including county emergency management coordinators, county health emergency response coordinators, law enforcement personnel, and certified water operators.

Emergency Response Plan Template Training. In addition, 12 emergency response plan template training sessions were conducted with county health departments, the League of Nebraska Municipalities, MAP, and the U.S. Environmental Protection Agency. A total of 332 people attended this training, including certified water operators, county health coordinators, law enforcement personnel, and Department staff.

Funding for System Security. Near the end of the year, the Department was approved to receive \$150,000 from the Centers for Disease Control to help public water systems with security enhancements and collaboration with local health departments across the state. The Department sent a letter to all community and non-transient non-community water systems with a population of less than 3,301. Systems were eligible for the maximum of about \$800.00 per facility. Before the year's end, seven applications had been received, and three had been approved. The approved systems used the funds for intrusion alarms at their facilities.

Disinfectant Residual Monitoring Change

On November 13, 2005, regulations went into effect that changed the requirement for monitoring for disinfection byproducts at the far end of the distribution system to correspond to the same time and place that coliform samples are taken.

What Nebraska's Public Water System Program Does

The Public Water System Program has 34 full time equivalent positions (FTEs). The Monitoring and Compliance Section has 13, the Engineering Section has eight, the Field Services and Training Section has 12, and portions of two other FTEs contribute to the administration of the program.

Field Services and Training Section

Public Water System Field Services Section personnel conduct sanitary surveys, train public water system operators, attend and/or present information at continuing education programs for water operators, inspect public water system construction projects, assist public water systems during emergency situations and help public water systems to achieve or maintain adequate technical, financial, and managerial capacity. Field offices are located in North Platte, Grand Island, Norfolk, Omaha, and Lincoln to provide close contact and timely assistance to Nebraska's public water systems.

In 2005, field personnel conducted 535 sanitary surveys (213 community, 80 non-transient non-community, and 242 transient public water systems) and 113 follow-up surveys (44 community, 9 non-transient non-community, and 60 transient public water systems) in Nebraska. A sanitary survey is an on-site review of the water source, facilities, equipment, operation and maintenance of a public water system for the purpose of evaluating the system's adequacy and ability to reliably produce and distribute safe drinking water. Field personnel also check for the presence of a certified water operator, an emergency plan, and a cross-connection control program. When deficiencies are found, the system is notified of the needed improvements. A total of 1,531 deficiencies were found in 2005 (202 more deficiencies than the previous year, with 149 more sanitary surveys having been done). There was an average of 4.3 deficiencies found in community systems, an average of 3.2 deficiencies found in non-transient non-community water systems, and an average of 1.5 deficiencies in transient water systems. In 2004 there were 1,137 significant deficiencies and 306 minor deficiencies. In 2005 there were 1,090 significant deficiencies and 441 minor deficiencies. The Department sees this as a sign that capacity development -- the Department's effort to help systems improve their finances, management, infrastructure and operations -- is working.

Field personnel conduct site inspections for the location of new wells. They also assist Engineering Services personnel in conducting inspections of public water system projects (such as the drilling of wells, the construction of treatment plants, and the erection of water towers) during construction and upon completion. When needed, they give public health advice concerning emergency situations associated with natural disasters or contamination of a public water system. As needed or upon request, they go out to communities to help public water system personnel identify potential causes of problems in their systems.

Hypochlorinators are made available to public water systems when bacterial contamination is a source of concern. This assistance to communities in need of temporary chlorination of their water supplies has been very helpful in ensuring the safety of drinking water. When a power outage or source failure is involved, the program staff also assist in locating portable generators or tank transport units. In general, the program's response to

emergencies is limited to consultation and advice regarding actions to be carried out by the owners of public water systems.

Field personnel conduct courses to train water operators. In addition to increasing water operators' basic knowledge, these courses give the operators an opportunity to meet with state field staff to ask questions about what is expected of them as they do their jobs.

In 2005, field personnel conducted 9 water operator training classes. Of the 125 attendees, a total of 103 passed the exam at the end of the class. An additional 33 persons took the correspondence course that is offered for the lowest level of certification. Nineteen of those successfully completed the examination after the course. For Grade 6 certification, 104 exams were given and 99 individuals passed the exam. For Grade 5 certification (which applies only to transient systems), 73 exams were given and 73 individuals passed.

Last year a total of 196 workshops/seminars/conferences were offered for the purpose of water operator continuing education. Of these, 52 focused primarily on backflow continuing education for Grade 6 operators.

Field personnel joined other professionals in educating children on the value of groundwater at the annual Children's Groundwater Festival in March.

The Drinking Water Program and other training providers offered continuing education opportunities for water operators in 2005. Coordinated by the program, a group informally known as the Water Operator Training Coalition convened periodically in 2005 to identify training needs and to avoid conflicts in the scheduling of training opportunities. Members include the Nebraska Rural Water Association, the League of Nebraska Municipalities, the Midwest Assistance Program, the Nebraska Environmental Training Center, and the Nebraska Section of the American Water Works Association. In 2005, as in past years, the Coalition produced a calendar identifying dates and locations of continuing education opportunities for distribution to certified water operators.

The same group that provides continuing education for water operators (known as the 2% Team because they're funded from the 2% set-aside fund of the Drinking Water State Revolving Fund) also assists the Department in helping systems with capacity development. The agencies assisting the Department provide technical, managerial and financial assistance to public water systems. This includes assistance with the applications for funding from various sources, training manuals, and mentors from large systems to assist small systems, as well as several other activities. The Department has found capacity development to be a proactive approach to helping systems.

Engineering Services Section

The Engineering Services Section provides engineering plan review; inspection of newly constructed projects for issuance of final approval for placement into service; and technical assistance and advisory contacts with owners/operators of public water systems, consulting engineers, state, federal and local officials, organizations and the general public in matters relating to siting, design, construction, maintenance and operation of public water systems.

Water system plan review was incorporated into state law to increase assurance that water source development, treatment, storage and distribution facilities would be constructed or expanded in a manner contributing to the ability of the system to deliver safe drinking water. Emphasis is placed on encouraging long-term benefits from capital investment as opposed to temporary actions designed to eliminate an emergency situation. These engineering services are a significant factor in preventing the occurrence of contamination and thus in the delivery of safe drinking water.

The Nebraska Safe Drinking Water Act and regulations adopted thereunder require that plans and specifications for all major construction related to public water systems be prepared by a registered professional engineer and be approved by the Department of Regulation and Licensure before construction costs are committed by the system owner. The law defines major construction as structural changes that affect the source of supply, treatment processes, or transmission of water to service areas, but it does not include the extension of service mains within an established service area. In 2005, the Department received 214 sets of plans for review and approval.

The program's engineering personnel provide technical assistance to owners/operators of public water systems in complying with the federal and state laws and regulations. They also assist state and federal agencies in eliminating environmental health hazards. Some of the additional major activities that staff members are currently participating in are the common pre-application review process for federal and state agencies' loan and grant programs for water and wastewater projects and Drinking Water State Revolving Fund program activities. The program also conducted its annual public water system needs survey.

At the beginning of the 2005 calendar year, the Engineering Services Section reviewed the responses from the annual Needs Survey sent out to all public water systems the preceding fall (2004). From that annual survey, Nebraska's PWS systems returned 521 surveys indicating approximately \$214 million in infrastructure needs. The priority ranking system developed by the Department and revised annually was used to prioritize and establish the funding order for Drinking Water State Revolving Fund (DWSRF) projects in the priority list. The DWSRF program is administered jointly by the Department and the Nebraska Department of Environmental Quality. In 2005, the DWSRF had 11 loans closed that totaled approximately \$16.4 million. Also, \$400,000 was awarded as loan forgiveness in 2005. High priority status projects, which are those that address water quality issues, accounted for seven of the 11 loans that were closed.

The Engineering Services staff also provided assistance in drafting the next DWSRF Intended Use Plan (IUP). In 2005, 230 public water systems with projects totaling \$258 million and 51 systems with land acquisition projects totaling approximately \$6.8 million were identified in the state fiscal year (SFY) 2006 IUP and listed on the project priority list and land acquisition list, respectively. These lists underwent the review and public comment process and were approved for the SFY 2006 DWSRF IUP that began July 1, 2005, and ended June 30, 2006. In the fall of 2005, preparations for the SFY2007 IUP began. Revisions were made to the previous year's public water system needs survey before it was mailed, along with a cover letter, to all the public water systems and all the consulting engineering firms that had submitted drinking water plans and specifications within the last several years. In November presentations were prepared and delivered at a stakeholders' meeting held in Lincoln. Three informational meetings were held in Hastings, Norfolk, and Chadron to discuss proposed changes to the next IUP.

An informational meeting for professional engineers who submit plans and specifications for drinking water projects to the Department was held in Lincoln on October 27, 2005. Topics on new and future regulations, federal and state funding/loan programs, research activities, and drinking water issues in Nebraska were presented. Attendees at this meeting were provided with five continuing education units.

The Engineering Services staff provided technical assistance to the University of Nebraska-Lincoln in a collaborative research project that is investigating if there could be a low cost remedy for reduction in arsenic/uranium levels for some existing community water supply wells that are currently facing problems in meeting safe drinking water standards for arsenic/uranium levels.

The Engineering Services staff also work with NDEQ in evaluating encroachment issues that may be of concern to public drinking water wells.

In summary, the Engineering Services Section activities play a significant role in ensuring that public water systems in Nebraska provide safe drinking water to the public.

SUMMARY REPORT FOR ENGINEERING SERVICES REVIEW AND INSPECTION ACTIVITIES

from January 1, 2005, to December 31, 2005

ACTIVITIES	NUMBER
Water Projects Received for Review and Approval	214
Water Projects Inspected	223
Major Engineering Reports for Water System Improvements Evaluated	20
New Water Well Sites Evaluated	27
Common Pre-Applications for Water/Wastewater Projects for Federal and State Financial Assistance Reviewed	18
Operation and Maintenance Manuals for Drinking Water State Revolving Loan Funded Projects Reviewed	10

Monitoring and Compliance Section

The Monitoring and Compliance (M&C) Section of the Public Water System Program reviews the analytical results of public water systems' monitoring for contaminants in their drinking water. In this review of analytical results, M&C personnel determine compliance with MCLs and issue appropriate enforcement actions when necessary. M&C staff determine PWS sample schedules and arrange the appropriate sampling kits to be sent from the Nebraska Department of Regulation and Licensure's Laboratory.

Safe Drinking Water Information System

The Safe Drinking Water Information System (SDWIS) is now available to all field personnel in their field offices and in the field as well as to those who work in the drinking water program in the Lincoln office. This computer system provides information on all public water system facility information, test results, violations, compliance assistance, enforcement, compliance schedules, water operator certification, and PWS operating permits. SDWIS is used in over 35 states. It receives electronic sample data from laboratories throughout the state as well as from the Department laboratory.

Monitoring and MCL Violations in 2005

A public water system is required to monitor and verify the presence or absence of contaminants. If a contaminant is present in the water, the system must monitor and verify that it does not exceed the MCL. A maximum contaminant level is the amount of a substance that is allowed to be in the water before the system must take corrective action to lower the level. Levels of substances below the MCL are not considered to be harmful to health. If the public water system fails to take the required water samples, a monitoring violation occurs.

A major monitoring violation occurs when no valid samples are obtained. Significant monitoring violations are defined as any major monitoring violation that has occurred during a specified reporting period, which differs for each contaminant.

In 2005, only **8** of **83** contaminants for which community public water systems monitor were found in quantities above the MCL. That means **75 contaminants** for which monitoring was conducted **were not found above the MCL in any community water system in Nebraska.**

The following tables summarize the types of violations issued in calendar year 2005 and the number of public water systems that received violations. There were a total of 588 violations from 436 public water systems for MCL and monitoring violations. There were also 87 public notice violations from 82 public water systems.

Total Coliform Violations

(All public water systems must monitor for total coliform)

Violation Type	Number of Violations	Number of Systems	Systems With Violations
Acute MCL	8	8	0.6%
Non-Acute MCL	204	147	10.9%
Major Monitoring	134	119	8.9%

Several types of coliform bacteria are found in the environment and in the intestinal tract of humans and warm-blooded animals. In themselves coliform bacteria are not necessarily harmful, but where they are found, other pathogens may also be found. Because of that and the fact that laboratory tests for coliform bacteria are relatively inexpensive, coliform has been used as an indicator of potential contamination.

Total coliform (any bacteria in the coliform family) violations occur when two or more samples test positive for total coliform. This is a **non-acute** violation. When a non-acute violation is issued, the public water system must notify the public about the potential adverse health effects and take action to correct the violation. An **acute** total coliform violation is issued when one or more samples indicate the presence of *E. coli*, a specific type of coliform bacteria. The public water system must notify the public and issue a boil water advisory until the violation is corrected.

If a public water system receives four total coliform rule violations in a twelve-month period, they will receive an Administrative Order which directs them to disinfect for six months. Four total coliform rule violations in a twelve-month period indicate that the system is significantly not in compliance.

The number of major monitoring violations is down from 2004. The number of non-acute MCL violations is down for the sixth year in a row. The number of acute MCL violations decreased by 50%.

Nitrate-Nitrite Violations

(This listing is separate from other inorganic contaminants because only community and non-transient non-community systems monitor for other inorganic contaminants, while **all** public water systems monitor for nitrate-nitrite.)

Violation	Number of Violations	Number of Systems	Systems With Violations
MCL – 10 mg/l	108	68	5.1%
Monitoring	10	10	0.7%

Nitrate-nitrite violations are considered acute violations. Immediate adverse health effects can be experienced when nitrate is consumed by the vulnerable population of pregnant women, infants under six months of age, and nursing mothers. A system is issued an Administrative Order to correct a nitrate contamination problem if two nitrate-nitrite violations are

issued in a nine-month period. The system is significantly not in compliance when it receives one violation.

The number of nitrate-nitrite MCL violations decreased from the previous year. The number of monitoring violations increased by one.

Volatile Organic Chemical Violations

(Community and non-transient non-community systems monitor for VOCs)

Contaminant	Number of MCL Violations	Number of Monitoring Violations	Number of Systems	Systems With Violations
1,1-Dichloroethylene	0	1	1	0.1%
1,1,1-Trichloroethane	0	1	1	0.1%
1,1,2-Trichloroethane	0	1	1	0.1%
1,2-Dichloroethane	0	1	1	0.1%
1,2-Dichloropropane	0	1	1	0.1%
1,2,4-Trichlorobenzene	0	1	1	0.1%
Benzene	0	1	1	0.1%
Carbon tetrachloride	0	1	1	0.1%
cis-1,2-Dichloroethylene	0	1	1	0.1%
Dichloromethane	0	1	1	0.1%
Monochlorobenzene	0	1	1	0.1%
o-Dichlorobenzene	0	1	1	0.1%
para-Dichlorobenzene	0	1	1	0.1%
Styrene	0	1	1	0.1%
Tetrachloro-ethylene	0	1	1	0.1%
Styrene	0	1	1	0.1%
Toluene	0	1	1	0.1%
trans-1,2-Dichloroethylene	0	1	1	0.1%
Trichloroethylene	0	1	1	0.1%
Vinyl chloride	0	1	1	0.1%
Xylenes (total)	0	1	1	0.1%

Inorganic Chemical Violations

(Community and non-transient non-community systems monitor for inorganic chemicals)

Contaminant	Number of MCL Violations	Number of Monitoring Violations	Number of Systems	Systems with Violations
Antimony	0	0	0	0%
Asbestos	0	0	0	0%
Arsenic	0	0	0	0%

Contaminant	Number of MCL Violations	Number of Monitoring Violations	Number of Systems	Systems with Violations
Barium	0	0	0	0%
Beryllium	0	0	0	0%
Cadmium	0	0	0	0%
Chromium total	0	0	0	0%
Cyanide (as free cyanide)	0	0	0	0%
Fluoride	0	0	0	0%
Mercury	0	0	0	0%
Nickel	0	0	0	0%
Selenium	2	0	2	0.3%
Sodium	0	0	0	0%
Thallium	0	0	0	0%

Non-Volatile Synthetic Organic Chemical Contaminants

Contaminant	Number of MCL Violations	Number of Monitoring Violations	Number of Systems	Systems with Violations
2,3,7,8-TCDD (Dioxin)	0	0	0	0%
2,4-D	0	0	0	0%
2,4,5-TP	0	0	0	0%
Alachlor	0	0	0	0%
Atrazine	0	0	0	0%
Benzo[a]pyrene	0	0	0	0%
Carbofuran	0	0	0	0%
Chlordane	0	0	0	0%
Dalapon	0	0	0	0%
Di(2-ethylhexyl)adipate	0	0	0	0%
Di(2-ethylhexyl)phthalate	0	0	0	0%
Dibromochloropropane	0	0	0	0%
Dinoseb	0	0	0	0%
Diquat	0	0	0	0%
Endothall	0	0	0	0%
Endrin	0	0	0	0%
Ethylene dibromide	0	0	0	0%
Glyphosate	0	0	0	0%
Heptachlor	0	0	0	0%
Heptachlor epoxide	0	0	0	0%
Hexachlorobenzene	0	0	0	0%
Hexachlorocyclopentadiene	0	0	0	0%
Lindane	0	0	0	0%
Methoxychlor	0	0	0	0%
Oxamyl (Vydate)	0	0	0	0%
Pentachlorophenol	0	0	0	0%
Picloram	0	0	0	0%

Contaminant	Number of MCL Violations	Number of Monitoring Violations	Number of Systems	Systems with Violations
Polychlorinated biphenyls	0	0	0	0%
Simazine	0	0	0	0%
Toxaphene	0	0	0	0%

Radionuclides (Only Community Water Systems Monitor for Radionuclides)

Contaminant	Number of MCL Violations	Number of Monitoring Violations	Number of Systems	Systems with Violations
Gross Alpha Including Radium, Excluding Radon and Uranium	5	0	3	0.5%
Uranium Mass	53	0	17	2.8%
Combined Radium (Radium - 226 and Radium -228)	3	0	1	0.2%

Disinfection Byproducts

Contaminant	Number of MCL Violations	Number of Monitoring Violations	Number of Systems
Total Trihalomethanes	1	0	1
Total Haloacidic Acids	0	0	0

Lead and Copper Violations

Contaminant	Number of MCL Violations	Number of Monitoring Violations	Number of Systems	Systems with Violations
Lead	0	0	0	0%
Copper	0	0	0	0%

Surface Water Treatment Rule Violations

Type of Violation	Number of Violations	Number of Systems
Treatment Technique	0	0
Monitoring	1	1

Administrative Orders Issued in 2005

	Total Coliform MCL	Total Coliform Monitoring	Nitrate	Uranium
Number of Orders	13	1	4	10
Population Affected	8,120	25	1092	15,001

The Public Water System Program issues an administrative order when a public water system is significantly out of compliance. (Each contaminant has different parameters that indicate what constitutes "significantly out of compliance.") Once an Administrative Order is issued, MCL violations continue to be issued, but no other formal enforcement is initiated while the Administrative Order for violating that particular maximum contaminant level is in effect. Failure to comply with the terms of an Administrative Order can result in action by the Department to revoke the system's permit to operate.

The number of Administrative Orders for Total Coliform MCL and Total Coliform Monitoring violations were down. Nitrate Administrative Orders increased from three to four. Ten Administrative Orders were issued for uranium MCL violations (which became regulated in December 2003) and one for a tetrachloroethylene MCL violation.

Bilateral Compliance Agreements

A bilateral compliance agreement is typically an agreement between the Department of Regulation and Licensure and a non-community public water system, such as a factory or school. This agreement allows a non-community public water system to operate with nitrate levels between 10.5 mg/l and 20 mg/l. The public water system must ensure that:

- Water above 10 mg/l will not be available to children under six months of age and pregnant or nursing women;
- A notice is continuously posted saying that the nitrate level in the water is above 10 mg/l and what the potential health effects of exposure are; and
- No adverse health effects will result from exposure to this water.

The non-community water system must submit an annual report to the Department which includes receipts for bottled water or other alternate sources of safe drinking water, copies of posted notices, and a statement that no known adverse health effects have occurred. In 2005, the Department entered into bilateral compliance agreements with three non-community public water systems, one more than the previous year.

Bilateral compliance agreements can also be utilized in situations dealing with community water systems.

Variances and Exemptions

No variances or exemptions were issued in 2005. When they are issued, they require the approval of the Advisory Council on Public Water Supply.

MCL Violations Other Than Total Coliform and Nitrate

All maximum contaminant level violations other than total coliform and nitrate are considered to be chronic in nature, i.e., the adverse health effects are evident only after exposure over a long period of time. These contaminants are listed at the end of this report. When a contaminant other than total coliform and nitrate is present in a water system, the public water system must monitor quarterly for that contaminant. If the level decreases, the monitoring frequency may be reduced. If a violation occurs, the public water system is significantly not in

compliance. A public water system is issued an Administrative Order to correct a chronic contamination problem after four consecutive MCL violations are issued. If the contaminant is measured above the "unreasonable risk to health" level, an Administrative Order is issued immediately.

Laboratory Support

The Department of Regulation and Licensure's Laboratory analyzes the majority of the samples for public water systems in the state. The numbers vary from month to month largely because monitoring cycles vary for different contaminants. The three most common routine analyses are bacteria, nitrate and VOCs. In 2005, the positive rate for colilert tests for public water systems was 9.0%, the same as the previous year. The *E. coli* positive rate for public water systems was 0.05%.

The laboratory finished remodeling an area of the present building to house a Biological Safety Level III Laboratory containment space. Access will be controlled and limited to those who have passed federal background checks and are fully trained in pathogenic microbiological methods.

Several new pieces of equipment have been added this year. The laboratory purchased a second Millipore Academic Water System that will provide deionized water on demand, a Magisert Inserting System that will fold and stuff reports and invoices each month, an Alpha/Beta/Gamma Monitoring System for monitoring possible radiation exposure to staff in the event of a radiological bioterrorism event, a Thermo Electron GC/MS to perform volatile organic testing, and a new flaked ice machine to properly prepare some reagents, perform metal testing, and to produce ice used for shipping samples on ice to contract laboratories.

Very few customer complaints were received. This is believed to be due in part to public water systems being able to view their compliance results on the Department's SDWIS Web site. Toward the end of the year a survey was sent to all public water system operators. The results will be compiled in order to determine what changes need to be made to better meet customer needs. In addition, the Client Reference Manual was updated. It includes information that customers may find helpful when processing samples, reading results, paying test invoices, or planning their testing budgets.

For more information call the Laboratory at (402) 471-2122.

Drought

As part of the Department's involvement in the Governor's Climate Assessment Response Committee (CARC) during the drought period of 2005, personnel from Field Services and Training maintained frequent contact with public water systems that were experiencing negative drought impacts due to groundwater and/or infrastructure issues.

Department personnel held area-wide meetings at two locations in the state that were experiencing prolonged drought conditions. In addition, articles were included in *The Water Spout*, the program newsletter, and presentations were made at various educational programs

for water system operations/management personnel to encourage development of water conservation plans and to reinforce the importance of water emergency preparations.

ATTACHMENT A

Definition of a Public Water System in the Safe Drinking Water Act:

Public water system means a system for providing the public with water for human consumption through pipes, or after August 5, 1998, other constructed conveyances, if such system has at least fifteen service connections or regularly serves an average of at least twenty-five individuals daily at least sixty days per year.

Public water system includes:

- any collection, treatment, storage, and distribution facilities under the control of the operator of such system and used primarily in connection with such system and
- any collection or pretreatment storage facilities not under such control which are used primarily in connection with such system. Public water system does not include a special irrigation district. A public water system is either a community water system or a non-community water system.

Service connection does not include a connection to a system that delivers water by a constructed conveyance other than a pipe if:

- (i) the water is used exclusively for purposes other than residential uses, consisting of drinking, bathing, cooking, and other similar uses,
- (ii) the department determines that alternative water to achieve the equivalent level of public health protection provided by the Nebraska Safe Drinking Water Act and rules and regulations under the act is provided for residential or similar uses for drinking and cooking, or
- (iii) the department determines that the water provided for residential or similar uses for drinking, cooking and bathing is centrally treated or treated at the point of entry by the provider, a pass-through entity, or the user to achieve the equivalent level of protection provided by the Nebraska Safe Drinking Water Act and the rules and regulations under the Act.

Special irrigation district means an irrigation district in existence prior to May 18, 1994, that provides primarily agricultural service through a piped water system with only incidental residential or similar users if the system or the residential or similar users of the system comply with exclusion provisions of subdivision (ii) or (iii) of this subdivision.

ATTACHMENT B

Safe Drinking Water Standards

The purpose of setting drinking water standards is to limit the level of contaminants that can be in water which the citizens of Nebraska consume so that they are protected from harm. Contaminants which might be found in water are grouped into three categories:

1. Natural pathogens: These are disease-causing microorganisms that can occur in source water or in the distribution system. They can be bacteria, protozoans, or viruses. These organisms can be transmitted by humans, and in many cases by animals. Exposure to them in even small amounts in drinking water can cause illness rapidly. Examples include *Cryptosporidium* and *giardia lamblia*.
2. Organic, inorganic and radioactive chemicals: These can be man-made, or they may occur naturally. Examples include carbon tetrachloride (organic -- carbon based), arsenic (inorganic -- compounds which are not carbon based), and radon (radioactive). Health effects from most of these substances occur after long-term exposure to low concentrations. These substances may come from a variety of sources, such as contamination of the aquifer or from naturally occurring elements.
3. Treatment Process Chemicals and By-products: Disinfectants and coagulants are chemicals used in treatment plants to purify drinking water. Some of the chemicals have health effects themselves and must be used carefully. With other substances, the treatment, such as chlorine, may produce chemical by-products, such as trihalomethanes, which may be harmful to health.

Between 1975 and 1980, EPA established standards for 23 different contaminants. With the passage of the Safe Drinking Water Act in 1974, EPA specified a maximum contaminant level (MCL) and a monitoring or sampling frequency for each contaminant. Minimum treatment requirements were established for contaminants that could not be monitored in a practical way.

In the 1980s, reports of drinking water contamination by substances such as industrial solvents and pathogenic organisms aroused concern about the adequacy of the program. The 1986 Amendments to the Safe Drinking Water Act required EPA to address 83 new contaminants within three years, to be followed by regulation of 25 more contaminants every three years thereafter. To date, all but seven of the 1986 regulations have been finalized. Public water systems must test for the following contaminants.

Inorganic Chemicals. All the following maximum contaminant levels (MCLs) for inorganic chemical contaminants apply to community water systems. All the following MCLs for inorganic chemicals, except the MCL for fluoride, apply to nontransient noncommunity water systems. Only the MCLs for nitrate, nitrite, and total nitrate and nitrite apply to transient, noncommunity systems.

<u>Inorganic Contaminants</u>	<u>MCL (mg/l)</u>
Antimony	0.006
Asbestos (fibers >10 m)	7 million fibers/liter
Arsenic	0.05
Barium	2
Beryllium	0.004
Cadmium	0.005
Chromium total	0.10
Cyanide (as free cyanide)	0.2
Fluoride*	4.0
Mercury	0.002
Nickel	0.1
Nitrate (as Nitrogen)	10
Nitrite (as Nitrogen)	1
Total Nitrate and Nitrite (as Nitrogen)	10
Selenium	0.05
Sodium	500.0
Thallium	0.002

*Community water systems experiencing fluoride levels above 2.0 milligrams per liter must notify the public.

Synthetic Organic Chemicals The following maximum contaminant levels for organic chemical contaminants apply to community and nontransient, noncommunity water systems.

<u>Volatile Organic Chemical Contaminants</u>	<u>MCL (mg/l)</u>
1,1-Dichloroethylene	0.007
1,1,1-Trichloroethane	0.2
1,1,2-Trichloroethane	0.005
1,2-Dichloroethane	0.005
1,2-Dichloropropane	0.005
1,2,4-Trichlorobenzene	0.07
Benzene	0.005
Carbon tetrachloride	0.005
cis-1,2-Dichloroethylene	0.07
Dichloromethane	0.005
Ethylbenzene	0.7
Monochlorobenzene	0.1
o-Dichlorobenzene	0.6
para-Dichlorobenzene	0.075
Styrene	0.1
Tetrachloroethylene	0.005
Toluene	1
trans-1,2-Dichloroethylene	0.1
Trichloroethylene	0.005
Vinyl chloride	0.002
Xylenes (total)	10

<u>Non-Volatile Synthetic Organic Chemical Contaminants</u>	<u>MCL (mg/l)</u>
2,3,7,8-TCDD (Dioxin)	3×10^{-8}
2,4-D	0.07
2,4,5-TP	0.05
Alachlor	0.002
Atrazine	0.003
Benzo[a]pyrene	0.0002
Carbofuran	0.04
Chlordane	0.002
Dalapon	0.2
Di(2-ethylhexyl)adipate	0.4(22)
Di(2-ethylhexyl)phthalate	0.006
Dibromochloropropane	0.0002
Dinoseb	0.007
Diquat	0.02
Endothall	0.1
Endrin	0.002
Ethylene dibromide	0.00005
Glyphosate	0.7
Heptachlor	0.0004
Heptachlor epoxide	0.0002
Hexachlorobenzene	0.001
Hexachlorocyclopentadiene	0.05
Lindane	0.0002
Methoxychlor	0.04
Oxamyl (Vydate)	0.2
Pentachlorophenol	0.001
Picloram	0.5
Polychlorinated biphenyls	0.0005
Simazine	0.004
Toxaphene	0.003

Microbiological The maximum contaminant levels for coliform bacteria, applicable to all public water systems, are as follows:

The MCL is zero, based on the presence or absence of total coliforms and/or *E. coli* in a sample, rather than coliform density.

Radionuclides

Combined radium-226 and radium-228 - 5 pCi per liter.

Gross alpha particle activity including radium-226 but excluding radon and uranium - 15 pCi per liter.

Uranium – 30 µg/L

Disinfection Byproducts

Byproduct	MCL (mg/L)
Total Trihalomethanes (TTHMs)	0.080
Haloacetic acids (five) HAA5	0.060
Bromate	0.010
Chlorite	1.0

Maximum Residual Disinfectant Levels (MRDLs)

DISINFECTANT RESIDUAL	MRDL (MG/L)
Chlorine	4.0 (as Cl ₂).
Chloramines	4.0 (as Cl ₂).
Chlorine dioxide	0.8 (as ClO ₂).

Lead and Copper

Before and after a PWS evaluates corrosion control treatment, it must test for:

pH
 conductivity
 calcium
 alkalinity
 water temperature
 orthophosphate (when an inhibitor containing an orthophosphate compound is used)
 silicate (when an inhibitor containing a silicate compound is used)

Contaminants which public water systems test for, but which are not regulated include:

Inorganic Chemical

Sulfate

Volatile Organic Chemicals:

Chloromethane
 Chlorodibromomethane

Bromomethane
 1,2,3-Trichloropropane

1,1,1,2-Tetrachloroethane
Chloroethane
2,2-Dichloropropane
o-Chlorotoluene
p-Chlorotoluene
Bromobenzene
1,3-Dichloropropene

Chlorobenzene
m-Dichlorobenzene
1,1-Dichloropropene
1,1-Dichloroethane
1,1,2,2-Tetrachloroethane
1,3-Dichloropropane

Pesticides and Other Synthetic Organic Chemicals:

Aldrin
Butachlor
Carbaryl
Dicamba
Dieldrin

3-Hydroxycarbofuran
Methomyl
Metolachlor
Metribuzin
Propachlor

ATTACHMENT C

Advisory Council on Public Water Supply

Members as of December 31, 2005:

Reed Miller (Engineer), Kearney
Leon Jons, M.D., (Physician), Crete
Jim Sheldon (Consumer), Crofton
Larry Cast (Consumer), Grand Island
Thomas Goulette, Sr. (Certified operator of system serving 5,000 or fewer persons), West Point
Jerome Obrist (Certified operator of a system serving over 5,000 persons), Lincoln
Jane Morgan (Member of a governing board of a public water system) (Gordon)

Members of the Advisory Council are appointed by the Governor for three-year terms. They can be reappointed until they have served three consecutive three-year terms. In 2005 the Council met five times - in February, May, September, November, and December.